

Appl. No. 09/109,343  
Amtd. dated 08/10/2004  
Reply to Office Action of June 14, 2004

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

1. (currently amended):

A router for routing a packet belonging to a virtual private network (VPN) and having a label that includes a virtual private network identifier (VPN-ID) according to the Multiprotocol Label Switching (MPLS) standard and a forwarding label standard, the router comprising:

- a) a first forwarding table associated with the VPN, from among one or more separate forwarding tables, each forwarding table associated with a different VPN; and
- b) a processor for routing the packet based on an association between the VPN-ID, the forwarding label, VPN-ID and the first forwarding table.

2. (currently amended):

The router as recited by claim 1 wherein in the forwarding table is includes a portion of a route table.

3-4. (cancelled)

5. (previously presented):

The router as recited by claim 1 further having a port for transmitting said packet.

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6-15. (cancelled)

16. (currently amended):

A method of routing a packet in a network, the packet belonging to a virtual private network (VPN) and having a label that includes a virtual private network identifier (VPN-ID) according to the Multiprotocol Label Switching (MPLS) standard and a forwarding label standard, the method comprising:

- a) maintaining a first forwarding table corresponding to a first virtual private network;
- b) maintaining a second forwarding table corresponding to a second virtual private network; and
- c) routing the packet based on an association between the VPN-ID, the forwarding label, VPN-ID and one of the first forwarding table and the second forwarding table.

17.-20. (cancelled)

21. (currently amended):

A network comprising:

- a) a first edge router configured to route a packet through a wide area network cloud, the packet belonging to a virtual private network (VPN), (VPN) and having a label that includes a virtual private network identifier (VPN-ID) according to the Multiprotocol Label Switching (MPLS) standard, and a second label identifying forwarding table corresponding to the virtual private network, the forwarding table including a portion of the route table;

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- b) a backbone router configured to receive the packet and route the packet based on a route table associated solely with the VPN-ID, from among one or more separate route tables, each table associated with a different VPN; and
- c) a second edge router configured to receive the packet.

22. (cancelled)

23. (previously presented):

The network as recited by claim 21 wherein the label further includes a forwarding label.

24. (original):

The network as recited by claim 21 wherein the backbone router comprises a second route table.

25. (cancelled)

26. (currently amended):

A method of routing a packet belonging to a virtual private network (VPN) and having a label that includes a virtual private network identifier (VPN-ID) according to the Multiprotocol Label Switching (MPLS) standard and a forwarding label corresponding to a forwarding table, standard, the method comprising:

- a) receiving the packet;
- b) identifying a routing the forwarding table associated with the VPN from among multiple separate routing forwarding tables associated with different VPNs; and

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c) facilitating routing of the packet to the VPN.

27. (previously presented):

The method of claim 26, wherein the VPN-ID is contained in a first label in the header.

28. (previously added):

The method of claim 26, wherein the routing of the packet is based on information in the header.

29. (currently amended):

The method of claim 27 wherein further comprising: identifying, from a second label, a forwarding table corresponding to the VPN, the forwarding table including includes a portion of the routing-a route table.

30. (previously added):

The method of claim 29 further comprising:

identifying, from the forwarding table, label switching information for routing the packet to the VPN.

31. (previously added):

The method of claim 30, wherein routing of the packet is based on information in the forwarding table.

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32. (cancelled)

33. (new):

A method of routing a packet belonging to a virtual private network (VPN) and having a label that includes a virtual private network identifier (VPN-ID) according to the Multiprotocol Label Switching (MPLS) standard in a first label in a header, the method comprising:

- a) receiving the packet;
- b) identifying a route table associated with the VPN from among multiple separate route tables associated with different VPNs;
- c) identifying, from a second label, a forwarding table corresponding to the VPN, the forwarding table including a portion of the route table; and
- d) facilitating routing of the packet to the VPN.

34. (new):

The method of claim 33, wherein the routing of the packet is based on information in the header.

35. (new):

The method of claim 33 further comprising:

identifying, from the forwarding table, label switching information for routing the packet to the VPN.

36. (new):

The method of claim 35, wherein routing of the packet is based on information in the forwarding table.

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## 37. (new):

The method of claim 33 wherein the label includes a forwarding label corresponding to a forwarding table.

## 38. (new):

The method of claim 16, wherein the VPN-ID is contained in a first label in the header.

## 39. (new):

The method of claim 16, wherein the routing of the packet is based on information in the header.

## 40. (new):

The method of claim 16 wherein the first forwarding table includes a first portion of a route table and the second forwarding table includes a second portion of the route table.

## 41. (new):

The method of claim 40 further comprising:

identifying, from the forwarding table, label switching information for routing the packet to the VPN.

## 42. (new):

The method of claim 16, wherein routing of the packet is based on information in the forwarding table.